Review of Dimock Week 3 Data Set Results

I have reviewed Week #3 Data Set results for target analyte concentrations detected above specified trigger levels, and to make note of outlier or anomalous results. Observations are noted below:

Analytes above Trigger Levels:

Lithium Trigger Level = 31 ug/L

Issue: Two complete sets of well data were submitted. The first set is listed as Draft Residential Data Reports, the second is listed as Toxicologist Reports. Lithium results for the Residential data are all non-detect at a reporting level of 200 ug/L. However, the Lithium trigger level is 31 ug/L, and therefore there may be instances in which the true concentration of Lithium is above the trigger level. All of the samples were reanalyzed by the laboratory in order to achieve a reporting limit lower than the trigger. Results of the reanalysis were contained in the Toxicologist Reports. In the reanalysis, Lithium was detected in many of the samples above the reporting limit, but below 200 ug/L. The reanalysis reporting limits are 25 ug/L.

Well samples containing Lithium above the trigger level are:
HW-15a at the tap as well as the well head, and for both filtered and non-filtered samples. Concentrations ranged from 29.1 ug/L to 33.5 ug/L.
HW-16 at the tap as well as the well head, and for both filtered and non-filtered samples. Concentrations ranged from 100 ug/L to 104 ug/L.
HW-30 at the tap as well as the well head, and for both filtered and non-filtered samples. Concentrations ranged from 27.8 ug/L to 32.1 ug/L.
HW-31 at the tap as well as the well head, and for both filtered and non-filtered samples. Concentrations ranged from 40.8 ug/L to 42.9 ug/L.
HW-47 Well head contained concentrations of 115 ug/L for unfiltered water and 128 ug/L for the filtered water. The tap water was non-detect.

Manganese Trigger Level = 320 ug/L

HW-22 at the tap as well as the well head, and for both filtered and non-filtered samples. Concentrations ranged from 313 ug/L to 635 ug/L.
HW-47 only at the well head. The concentration at the well head is 947 ug/L for the unfiltered sample and 877 ug/L for the filtered sample.

To be noted is that the well head sample also contains high concentrations of Calcium, Magnesium, and Sodium (consistent with untreated "hard water" wells). The samples at the tap are lower in concentration for Calcium and Magnesium, and almost twice as high for Sodium than the well head. This is a good indication that the home contains a water softener treatment system, as sodium salt is used in the treatment to exchange Calcium and Magnesium for Sodium.

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Arsenic Trigger Level = 4.5 ug/L

HW-15a at the well head only for unfiltered water. The concentration was 5.1 ug/L. The filtered well head sample and the tap water samples contained trace levels of arsenic below the trigger level.
HW-22 at the well head only for unfiltered water. The concentration was 7.1 ug/L. The filtered well head sample and the tap water samples contained trace levels of arsenic below the trigger level.
HW-47 at the tap as well as the well head, and for both filtered and non-filtered samples. Concentrations ranged from 90.2 ug/L to 94.2 ug/L.

Sodium Trigger Level = 20,000 ug/L

HW-15a at the tap for filtered and non-filtered water
Concentrations were 64,600 ug/L for the unfiltered tap water and 66,000 ug/L for the filtered tap water. The well head water contained sodium below the trigger level (16,900 ug/L for the unfiltered water and 16,200 ug/L for the filtered water).
HW-16 at the tap as well as the well head, and for both filtered and non-filtered samples. Concentrations ranged from 49,500 ug/L to 50,200 ug/L.
HW-31 at the tap as well as the well head, and for both filtered and non-filtered samples
Concentrations ranged from 25,500 ug/L to 26,700 ug/L.
HW-47 at the tap as well as the well head, and for both filtered and non-filtered samples
Concentrations ranged from 53,600 ug/L to 93,900 ug/L. See note above for Manganese for this well.

Barium Trigger Level = 2900 ug/L

HW-16 at the well head only and for unfiltered water.
Concentration was 2910 ug/L. The filtered well head water and filtered and unfiltered tap water all contained Barium at levels below the trigger level (range from 2850 ug/L to 2870 ug/L).

Chromium Trigger Level = 3.1 ug/L

HW-22 at the well head only and for unfiltered water:
Concentration was 4.9 ug/L. The filtered well head water was non-detect. The unfiltered tap water was below the trigger level, but was detected at 3.8 ug/L. The filtered tap water was non-detect.

Lead Trigger Level = 15 ug/L

HW-22 at the well head only and for unfiltered water:
Concentration was 22.7 ug/L. The filtered well head water was non-detect. The unfiltered tap water was below the trigger level, but was detected at 8.1 ug/L. The filtered tap water was non-detect.

Other Notes:

Week 2 Results issues:
All previous issues concerning detections at values lower than the reporting units, but not J-flagged as estimates have been resolved. None of the week 3 data had this issue. All previous instances in which some analytes were reported with different units have been resolved for the week 3 data. All results for organic and metal analytes are in ug/L for consistency. The previous issue in which the analyte "TPH as Gasoline" was reported has been changed to "THP Gasoline Range Organics" which is the conventional nomenclature.

Week 3 Results Consultation with Region 3:
On April 12, 2012, I had a conversation with Dawn Loven and Kelley Chase of Region 3 concerning the week 3 data. We all concurred as to the detections and trigger levels that are reported on week 3 results. There are no other issues with the data, and we are awaiting a summary report of the detections, and any potential health affects from Region 3. At this time there seems to be no reason to seek further consultation with ORD concerning any issue with this data.

There was confirmation from Dawn that the home associated with well HW-47 does indeed have a water softener treatment system, explaining why Manganese was not detected at the tap water and the level of sodium at the tap water was almost two times the level at the well head.

We, also had a discussion as to the reporting of the Lithium results to residents whose water contained Lithium at levels above the trigger levels. Region 3 was considering reporting the original set of results to the residents. These were the results that reported Lithium as non-detect, but had a reporting level much higher than the trigger level. Region 3 would later issue a supplemental report for the Lithium on the re-analysis samples which show the detects above the trigger levels. The reason for issuing a supplemental report is that the original data has passed all QA and is ready to be reported to the residents, while the re-analysis samples are still in the final QA review process and are not ready to be reported to the residents. I mentioned that Headquarters did not necessarily think this a good idea, and that it would be better to wait to report results to the residents when the re-analysis are fully QAed and are ready to be reported. Dawn and Kelly said they would take this recommendation to Region 3 management.

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